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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
HUGHES, SCOTT A	
ART UNIT	PAPER NUMBER
3663	

NOTIFICATION DATE	DELIVERY MODE
04/01/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/532,647	ARNEGAARD ET AL.	
	Examiner	Art Unit	
	SCOTT A. HUGHES	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12,13 and 15-29* is/are pending in the application.

4a) Of the above claim(s) *9 and 18-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10,12,13,15-17 and 26-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Inventorship

In view of the papers filed 4/15/2007, it has been found that this nonprovisional application, as filed, through error and without deceptive intent, improperly set forth the inventorship, and accordingly, this application has been corrected in compliance with 37 CFR 1.48(a). The inventorship of this application has been changed by adding Daniel Golparian as an inventor

The application will be forwarded to the Office of Initial Patent Examination (OIPE) for issuance of a corrected filing receipt, and correction of Office records to reflect the inventorship as corrected.

Response to Arguments

Applicant's remarks and amendments filed 12/22/2009 with respect to the rejections under 35 U.S.C. 112 have been fully considered and are persuasive. The previous rejection of claim 6 under 35 U.S.C. 112 is withdrawn.

Applicant's arguments and amendments filed 12/22/2009 with respect to the rejections under 35 U.S.C. 102 and 103 have been fully considered but they are not persuasive.

With respect to claim 1, Applicant argues that Smith does not teach a first router coupled to a second router. This argument is not persuasive, as applicant does not claim how the first router must be coupled to a second router. In Smith, there are

multiple routers all connected to the same network, and therefore the routers are coupled through the network (Fig. 1) ([0014-0022]).

With respect to claim 4, applicant argues that Smith does not teach that the first router routes data to the data collection system through a second router. Although Smith does not teach routing from a first router through a second router, Smith does disclose different data source node systems connected to data collection system (Fig. 1). It is known in the art of internet networks that multiple routers can be used, wherein a first router routes data through a second router in the path to a central data collection system. Szyszko (US20020071430) teaches that using multiple routers, and routing data from one router through another router to a central data collection system allows for networks in one geographical area to be connected to larger regional networks ([0013-0014]). It would have been obvious to modify Smith to include routing the data from the routers at the data source nodes through a second router as taught by Smith in order to connect the data source nodes, that Smith discloses can be located at different geographical areas in a survey area, into a larger regional network (18 in Smith) that allows access to the data of any user anywhere.

With respect to claim 26, applicant argues that Smith fails to teach a medium bandwidth data path and high bandwidth data path. This argument is not persuasive, as Smith teaches that different bandwidth data paths are required depending on the amount of data that the path must support. As Smith teaches that the amount of data from each source node to the router is less than the data that would be sent by the router over the entire network, it would have been obvious to use a medium bandwidth

data path for the smaller amount of data and a higher bandwidth path for the connection between the router and the data collection system, over which much more data could be transmitted.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 6, and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith (US20040252585).

With regard to claim 1, Smith discloses a seismic acquisition system (abstract) comprising:

a plurality of seismic data sources 20 (Fig. 2) (described as feature 21 in the specification) for generating seismic data ([0014]; [0019]);

a data collection system 20 utilizing an open network protocol (Fig. 1) ([0014]; [0019-0026]);

a plurality of data source nodes 14, wherein each source node is coupled to a portion of the plurality of seismic data sources ([0014]) (Fig. 1); and

a first router 16 coupled a second router 16 (through network 18), to a portion of the data source nodes 14 and the data collection system (Fig. 1) ([0014]; [0020-0023]), wherein the first router is configured to route the seismic data generated by the portion of the plurality of seismic data sources to the data collection system 20 in accordance with an open network protocol (Fig. 1) ([0014]; [0021-0026]).

With regard to claim 2, Smith discloses that the router routes data to the seismic data sources ([0014]) (remote processing device access data from any geophone over the network through the router).

With regard to claim 6, Smith discloses a line network having a land based seismic cable ([0022]).

With regard to claim 10, Smith discloses that the open network protocol includes the Internet Protocol ([0021-0026]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 5 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith as applied to claim 1 above, and further in view of Johnson (Eos. Trans. AGU Fall Meeting, 2001).

With regard to claims 3, 5, and 27 Smith does not disclose that each of the data source nodes or data sources are assigned at least two respective network addresses under the open network protocol. Johnson teaches a network setup for monitoring seismic events, and teaches that the source nodes and data collection system are assigned at least two respective network addresses under open network protocol (Pages 1-2). It would have been obvious to modify Smith to include two respective network addresses for the components of the system as taught by Johnson in order to have a network that can operate in different modes and to simplify the physical cables needed between devices.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith as applied to claim 1 above, and further in view of Szyszko (US20020071430).

With regard to claim 4, Smith discloses that the first router routes data generated by the seismic data sources to the data collection system through the data source nodes in accordance with the open network protocol (Fig. 1). Smith shows a plurality of routers in the network that route data to the data collection system through the data source nodes using the open network protocol ([0014]). Smith discloses that the different data source node areas can be in different areas, and that some may be in remote areas (Fig. 1) ([0022-0023]). Szyszko teaches that using multiple routers, and routing data from one router through another router to a central data collection system allows for networks in one geographical area to be connected to larger regional networks ([0013-0014]). It would have been obvious to modify Smith to include routing

the data from the routers at the data source nodes through a second router as taught by Smith in order to connect the data source nodes, that Smith discloses can be located at different geographical areas in a survey area, into a larger regional network (18 in Smith) that allows access to the data of any user anywhere. By routing through second routers as taught by Szyszko, the node systems of Smith could be spread out over a larger area or in different remote areas of the same survey area, while still allowing the data from all node systems to reach the larger regional networks.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith as applied to claim 1 above, and further in view of Fukui (6131119).

With regard to claim 13, Smith does not specifically disclose a location mapping service for generating a mapping between network addresses of the data collection system, the first and second routers, the data source nodes, and the seismic data sources and physical locations of the data collection system, the routers, the data source nodes, and the seismic data sources. Smith discloses a network of the components of the system, but does not specifically disclose a mapping service to map the network addresses to the physical locations of the system. Fukui teaches a mapping service that maps network addresses to physical locations (abstract; Column 2, Lines 30-40). It would have been obvious to modify Smith to include a mapping service to map the network addresses to physical locations as taught by Fukui in order to be able to create a physical network topography of the equipment in the system so that the network configuration and topology of the devices can be displayed to check

that the system is configured properly. Smith does not disclose an auto-configuration capability for automatically reconfiguring the network upon the addition of an additional piece of seismic equipment. Fukui teaches that it is known to create an autoconfiguration capability of a network of components that automatically reconfigures the network upon the addition of an additional piece of equipment (abstract; Column 6, Lines 1-11; Column 8, Line 24 to Column 10, Line 2). It would have been obvious to modify Smith to include an autoconfiguration capability as taught by Fukui in order to update the network when new pieces of equipment need to be installed to replace geophone units that stop working.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith as applied to claim 1 above, and further in view of Read (4885724).

With regard to claims 7-8, Smith does not disclose that the seismic data sources include at seismic sources that are vibrators. Smith discloses a seismic survey network, but focuses on the receivers of the seismic waves rather than on the generators of the seismic waves. Read teaches that seismic sources that are vibrators are known sources used in seismic surveys (abstract; Columns 2-3) (Fig. 1b). It would have been obvious to modify Smith to include vibrators as seismic sources in order to have sources for seismic prospecting that are economical and that can be programmed to generate desired source waveforms.

Claims 28, 12, 15, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith as applied to claim above, and further in view of Fukui (6131119) and Arescon (Embedded Linux in a Soft Real-Time Task: The Canadian Geological Survey Internet Seismometer).

With regard to claim 28, Smith discloses that the seismic data stations have clocks, and that time stamping of the data is done. Smith does not disclose a synchronization service for synchronizing a plurality of clocks for the data collection system, the first and second router, the data source nodes, and the seismic data sources. Smith does teach that these devices are connected in a network using an IP protocol, and teaches that the system can be configured to operate with other known internet protocols ([0026]). Arescon teaches a seismic data collection system that uses an open network protocol, and teaches that a synchronization service in form of Network Time Protocol is used as the protocol of the network system (Page 9). It would have been obvious to modify Smith to include using NTP as the protocol of the network in order to ensure that data packets being sent by different devices on the network all have the same time reference.

Smith does not disclose an auto-configuration capability for automatically reconfiguring the network upon the addition of an additional piece of seismic equipment. Fukui teaches that it is known to create an autoconfiguration capability of a network of components that automatically reconfigures the network upon the addition of an additional piece of equipment (abstract; Column 6, Lines 1-11; Column 8, Line 24 to Column 10, Line 2). It would have been obvious to modify Smith to include an

autoconfiguration capability as taught by Fukui in order to update the network when new pieces of equipment need to be installed to replace geophone units that stop working.

With regard to claim 12, Arescon teaches that the synchronization service comprises the Network Time Protocol (Page 9).

With regard to claim 15, Arescon teaches that the synchronization service tolerates changes in topology (is maintained by NTP and several remote timeservers) (Page 9).

With regard to claim 16, Arescon teaches that the synchronization service synchronizes clock hierarchically (Page 9).

With regard to claim 17, Arescon teaches that the service tolerates breaks (Pages 9-10).

Claims 26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US20040252585) in view of Johnson (Eos. Trans. AGU Fall Meeting, 2001).

With regard to claims 26, Smith discloses a seismic acquisition system (abstract) comprising:

a first line network (upper connection of 12 and router 16 to TCP/IP Network 18 and RPDs 20 in Fig. 1) ([0014]; [0021-0022]) having:

a first plurality of seismic data sources 20 (Fig. 2) (described as feature 21 in the specification) for generating seismic data ([0014]; [0019]);

a first data collection system 20 (Fig. 1) ([0014]; [0019-0026]);

a first plurality of data source nodes 14, wherein each source node is coupled to a portion of the first plurality of seismic data sources ([0014]) (Fig. 1) via a first medium bandwidth data path ([0010]; [0014]; [0022]) (medium bandwidth connection of ethernet cables disclosed); and

a first router 16 (upper router in Fig. 1) coupled to a portion of the first plurality of data source nodes 14 and to the first data collection system (Fig. 1) ([0014]; [0020-0023]) via a high bandwidth data path ([0010]; [0014]; [0022] – higher bandwidth cable to handle more data as disclosed in paragraph [0010]), wherein the router is configured to route the seismic data generated by the portion of the first plurality of seismic data sources to the first data collection system 20 in accordance with an open network protocol (Fig. 1) ([0014]; [0021-0026]).

Smith does not disclose that the seismic data sources, data collection system, data source nodes, and routers are assigned at least two network addresses. Johnson teaches that it is known in seismic networks using IP addresses for the routers and equipment to allow several IP addresses to be assigned to a single router or other component of the system (multi-netted system) (Pages 1-2). It would have been obvious to modify Smith to include assigning at least two network addresses to the components of the seismic acquisition system that uses the open protocol as taught by Johnson in order to simplify physical cables between devices and to allow for data transfer to continue in the event of system outages or failures in certain parts of the system.

With regard to claim 29, Smith discloses a seismic acquisition system (abstract) comprising:

a second line network (lower connection of 12 and router 16 to TCP/IP Network 18 and RPDs 20 in Fig. 1) ([0014]; [0021-0022]) having:

a second plurality of seismic data sources 20 (Fig. 2) (described as feature 21 in the specification) for generating seismic data ([0014]; [0019]);

a second data collection system 20 (Fig. 1) ([0014]; [0019-0026]);

a second plurality of data source nodes 14, wherein each source node is coupled to a portion of the second plurality of seismic data sources ([0014]) (Fig. 1) via a second medium bandwidth data path ([0010]; [0014]; [0022]) (medium bandwidth connection of ethernet cables disclosed); and

a second router 16 (lower router in Fig. 1) coupled to a portion of the second plurality of data source nodes 14 and to the second data collection system (Fig. 1) ([0014]; [0020-0023]) via a high bandwidth data path ([0010]; [0014]; [0022] – higher bandwidth cable to handle more data as disclosed in paragraph [0010]), wherein the router is configured to route the seismic data generated by the portion of the second plurality of seismic data sources to the second data collection system 20 in accordance with an open network protocol (Fig. 1) ([0014]; [0021-0026]).

Smith does not disclose that the seismic data sources, data collection system, data source nodes, and routers are assigned at least two network addresses. Johnson teaches that it is known in seismic networks using IP addresses for the routers and equipment to allow several IP addresses to be assigned to a single router or other

component of the system (multi-netted system) (Pages 1-2). It would have been obvious to modify Smith to include assigning at least two network addresses to the components of the seismic acquisition system that uses the open protocol as taught by Johnson in order to simplify physical cables between devices and to allow for data transfer to continue in the event of system outages or failures in certain parts of the system.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SCOTT A. HUGHES whose telephone number is (571)272-6983. The examiner can normally be reached on M-F 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Scott A. Hughes/
Primary Examiner, Art Unit 3663